FIG. 1

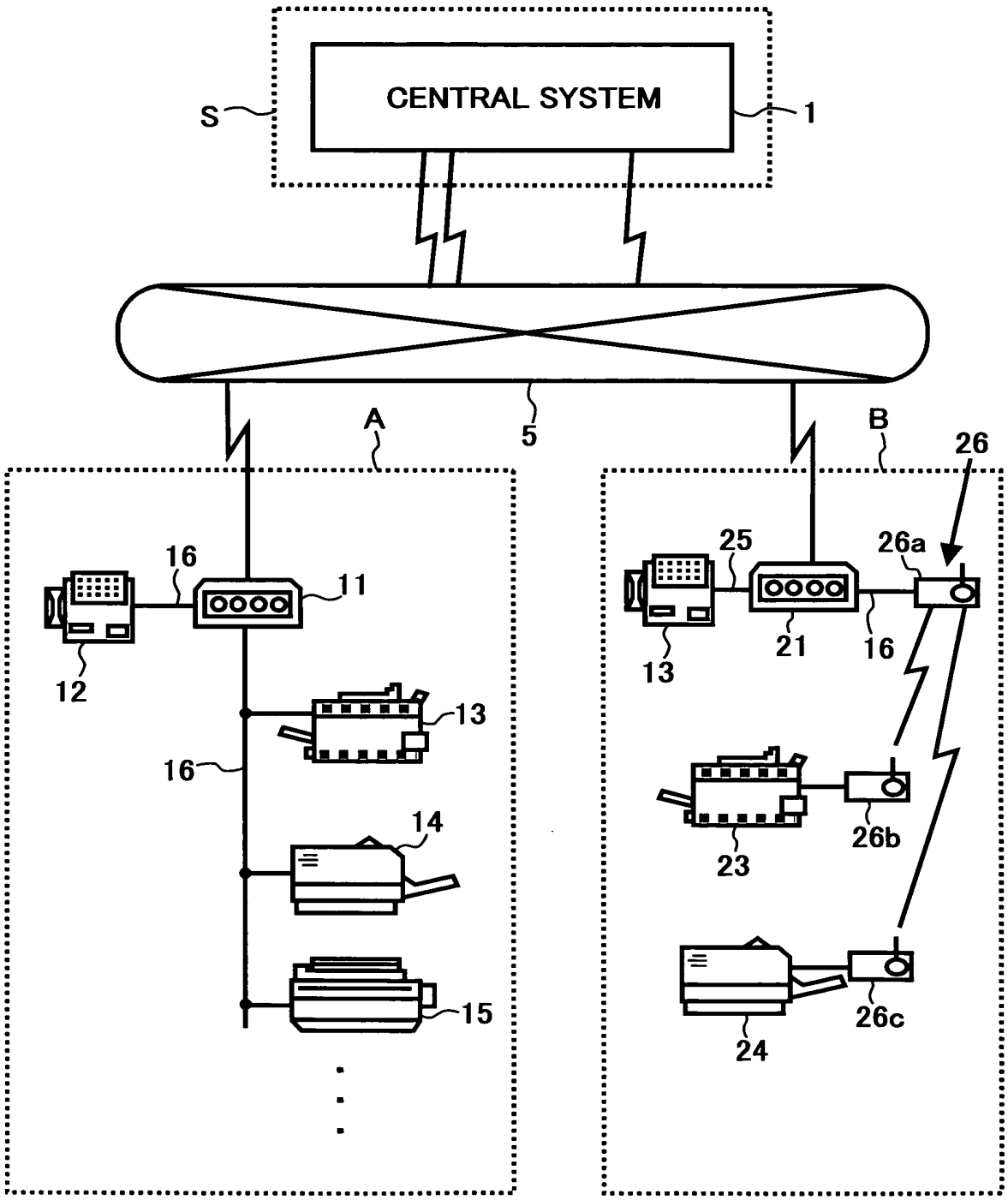

CENTRAL SYSTEM
S
1
5
A
B
26
16
11
12
13
16
14
15
25
26a
13
21
16
23
26b
24
26c

FIG. 2

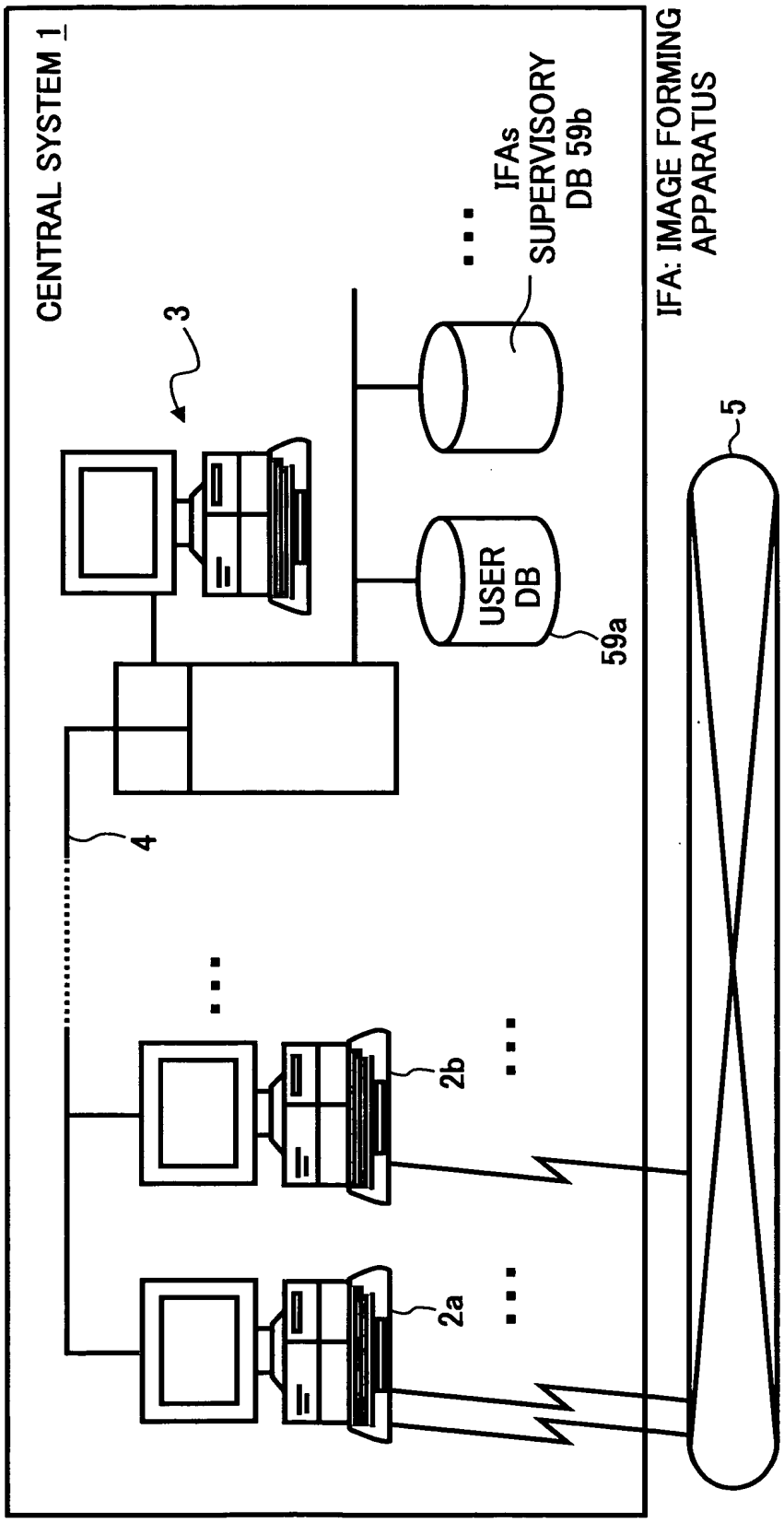

CENTRAL SYSTEM 1
IFA: IMAGE FORMING APPARATUS
IFAs SUPERVISORY DB 59b
USER DB
59a
3
4
5
2a
2b

FIG. 3

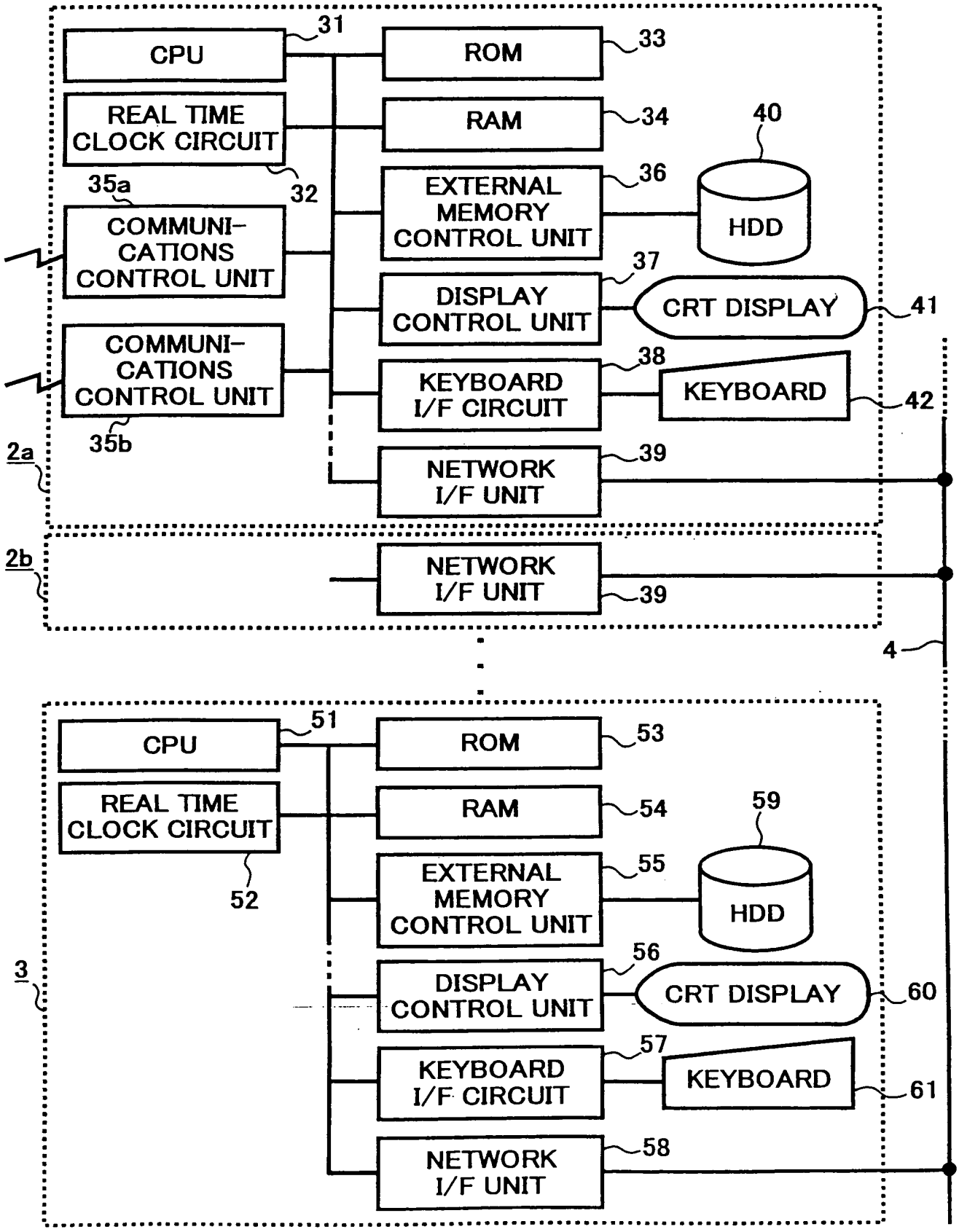

CPU
31
ROM
33
REAL TIME CLOCK CIRCUIT
32
RAM
34
40
35a
COMMUNI-CATIONS CONTROL UNIT
EXTERNAL MEMORY CONTROL UNIT
36
HDD
37
DISPLAY CONTROL UNIT
CRT DISPLAY
41
COMMUNI-CATIONS CONTROL UNIT
35b
38
KEYBOARD I/F CIRCUIT
KEYBOARD
42
2a
NETWORK I/F UNIT
39
2b
NETWORK I/F UNIT
39
4
CPU
51
ROM
53
REAL TIME CLOCK CIRCUIT
52
RAM
54
59
EXTERNAL MEMORY CONTROL UNIT
55
HDD
3
56
DISPLAY CONTROL UNIT
CRT DISPLAY
60
57
KEYBOARD I/F CIRCUIT
KEYBOARD
61
NETWORK I/F UNIT
58

FIG. 4

MODEL/ MACHINE No.	USER ID	USER NAME	ADDRESS	BUILDING NAME	NAME OF PERSON IN CHARGE OF USER	TEL No. OF PERSON IN CHARGE OF USER
XX···1	XXX5600	XXX	ABC	BUILDING A	Mr. A	12-3456-7890
XX···2	XXX1000	XX	DEF	BUILDING B	Mr. B	23-4567-8901
⋮						

COMMUNI-CATIONS ADAPTER MODEL/ MACHINE No.	COMMUNI-CATIONS ADAPTER CONNECTION No.	SERVICE SECTION			...
		SERVICE STATION NAME	CONTACT DISTINATION	CE IN CHARGE OF SERVICE	
XXX-1234	12-6543 -9876	YOKO-HAMA SS	XX-XXXX	Mr. C	
XXX-5678	98-7654-3210	YOKO-HAMA SS	XX-XXXX	Mr. D	

FIG. 5

MODEL/ MACHINE No.	HARDWARE CONSTRUCTION							
	CONTROL BASEBOARD /ROM							
	CONTROL BASEBOARD C1 Ver.	ROM C11 Ver.	ROM C12 Ver.	•••	CONTROL BASEBOARD C2 Ver.	CONTROL BASEBOARD C21 Ver.	CONTROL BASEBOARD C22 Ver.	•••
XX•••1	1.00	1.22	1.00		1.01	0.00	0.00	
XX•••2	1.02	1.00	0.00		1.13	1.00	0.00	
•								
•								
•								

UNIT					•••
OPTICAL UNIT CONTROL UNIT D1 Ver.	HIGH VOLTAGE POWER SOURCE UNIT D2 Ver.	MOTOR CONTROL UNIT D3 Ver.	SORTER CONTROL UNIT D4 Ver.	•••	
1.00	1.22	1.22	1.00		
1.02	1.00	1.00	0.00		

OBLON, SPIVAK, ET AL
SERIAL NO: 09/900,919
INV: KOBUN SUZUKI
DOCKET #209799US-2
SHEET 5 OF 21

FIG. 6

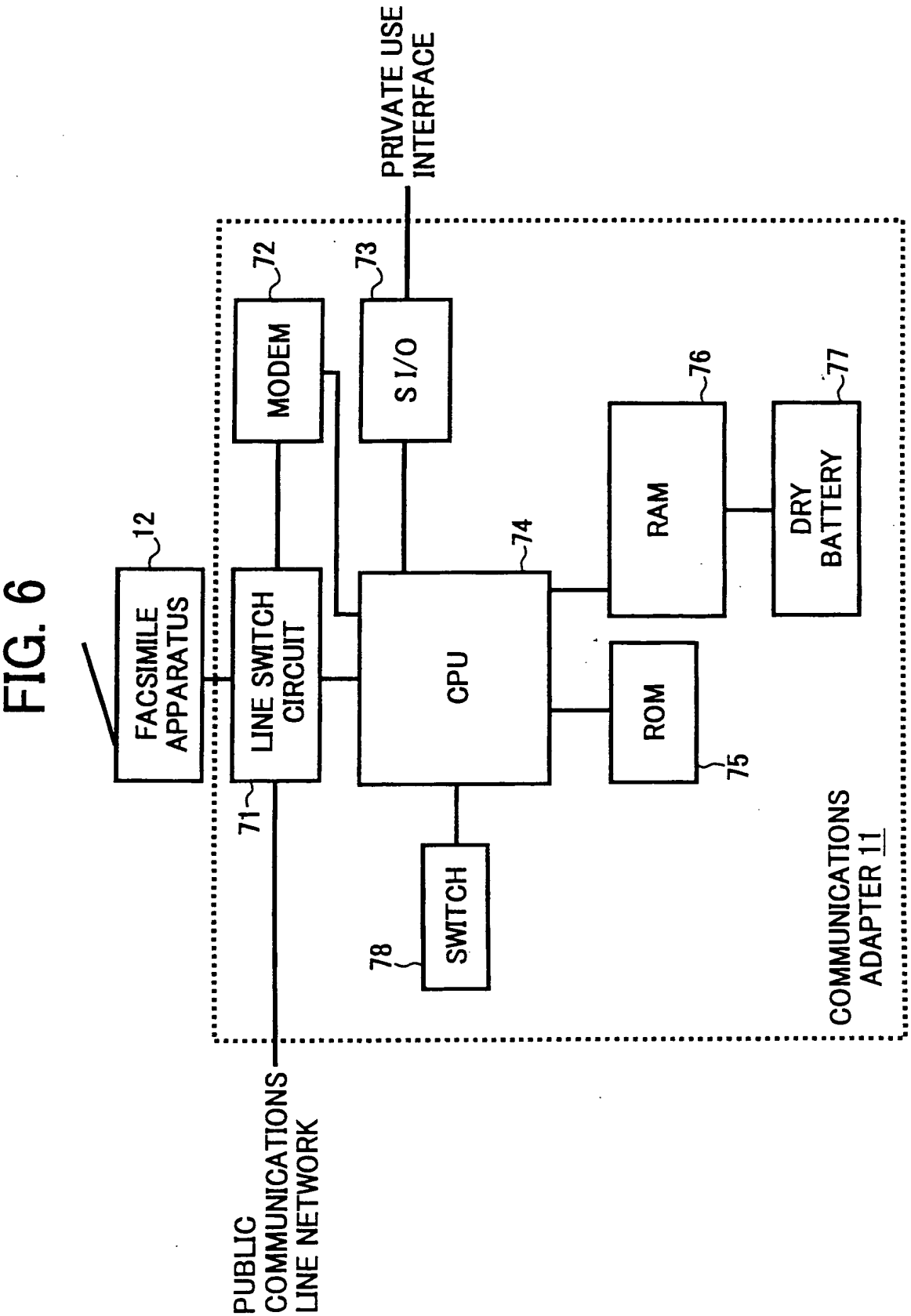

PRIVATE USE INTERFACE
72
73
MODEM
S I/O
76
77
RAM
DRY BATTERY
12
74
FACSIMILE APPARATUS
LINE SWITCH CIRCUIT
CPU
ROM
75
71
78
SWITCH
COMMUNICATIONS ADAPTER 11
PUBLIC COMMUNICATIONS LINE NETWORK

FIG. 7

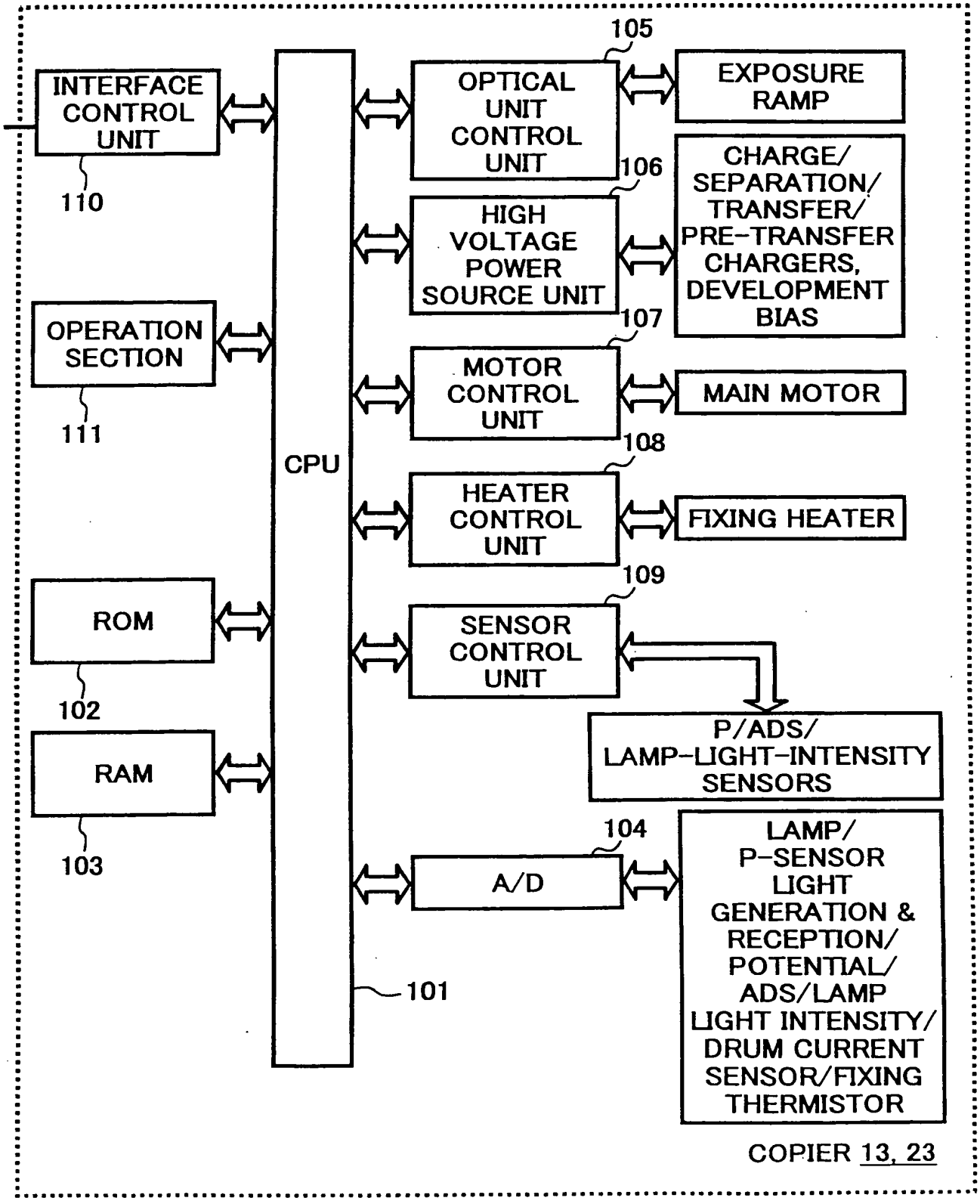

INTERFACE CONTROL UNIT
110
OPERATION SECTION
111
ROM
102
RAM
103
CPU
101
105
OPTICAL UNIT CONTROL UNIT
EXPOSURE RAMP
106
HIGH VOLTAGE POWER SOURCE UNIT
CHARGE/ SEPARATION/ TRANSFER/ PRE-TRANSFER CHARGERS, DEVELOPMENT BIAS
107
MOTOR CONTROL UNIT
MAIN MOTOR
108
HEATER CONTROL UNIT
FIXING HEATER
109
SENSOR CONTROL UNIT
P/ADS/ LAMP-LIGHT-INTENSITY SENSORS
104
A/D
LAMP/ P-SENSOR LIGHT GENERATION & RECEPTION/ POTENTIAL/ ADS/LAMP LIGHT INTENSITY/ DRUM CURRENT SENSOR/FIXING THERMISTOR
COPIER 13, 23

FIG. 8

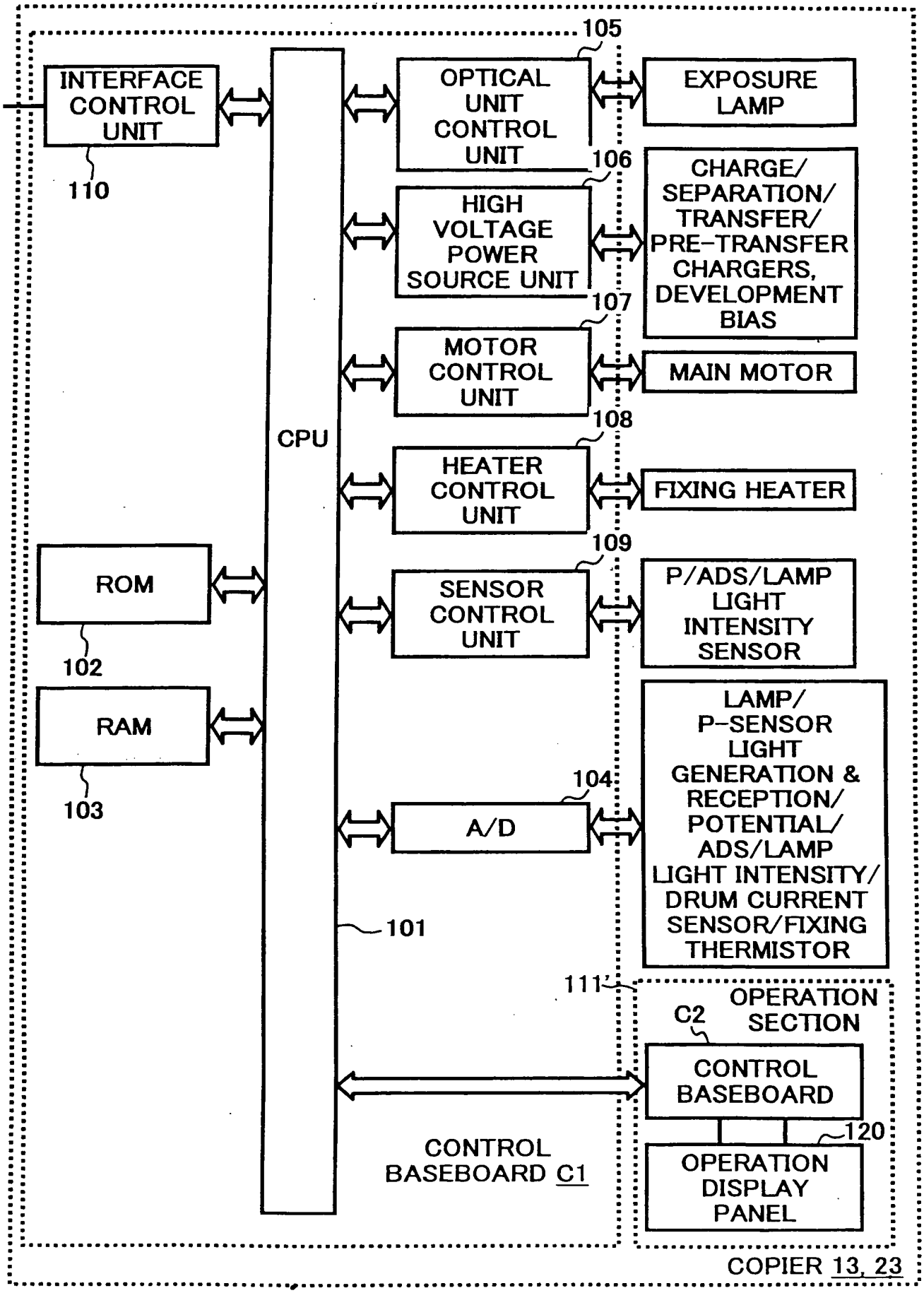

105
INTERFACE CONTROL UNIT
110
OPTICAL UNIT CONTROL UNIT
EXPOSURE LAMP
106
HIGH VOLTAGE POWER SOURCE UNIT
CHARGE/ SEPARATION/ TRANSFER/ PRE-TRANSFER CHARGERS, DEVELOPMENT BIAS
107
MOTOR CONTROL UNIT
MAIN MOTOR
CPU
108
HEATER CONTROL UNIT
FIXING HEATER
109
ROM
102
SENSOR CONTROL UNIT
P/ADS/LAMP LIGHT INTENSITY SENSOR
RAM
103
LAMP/ P-SENSOR LIGHT GENERATION & RECEPTION/ POTENTIAL/ ADS/LAMP LIGHT INTENSITY/ DRUM CURRENT SENSOR/FIXING THERMISTOR
104
A/D
101
111
OPERATION SECTION
C2
CONTROL BASEBOARD
120
OPERATION DISPLAY PANEL
CONTROL BASEBOARD C1
COPIER 13, 23

FIG. 9

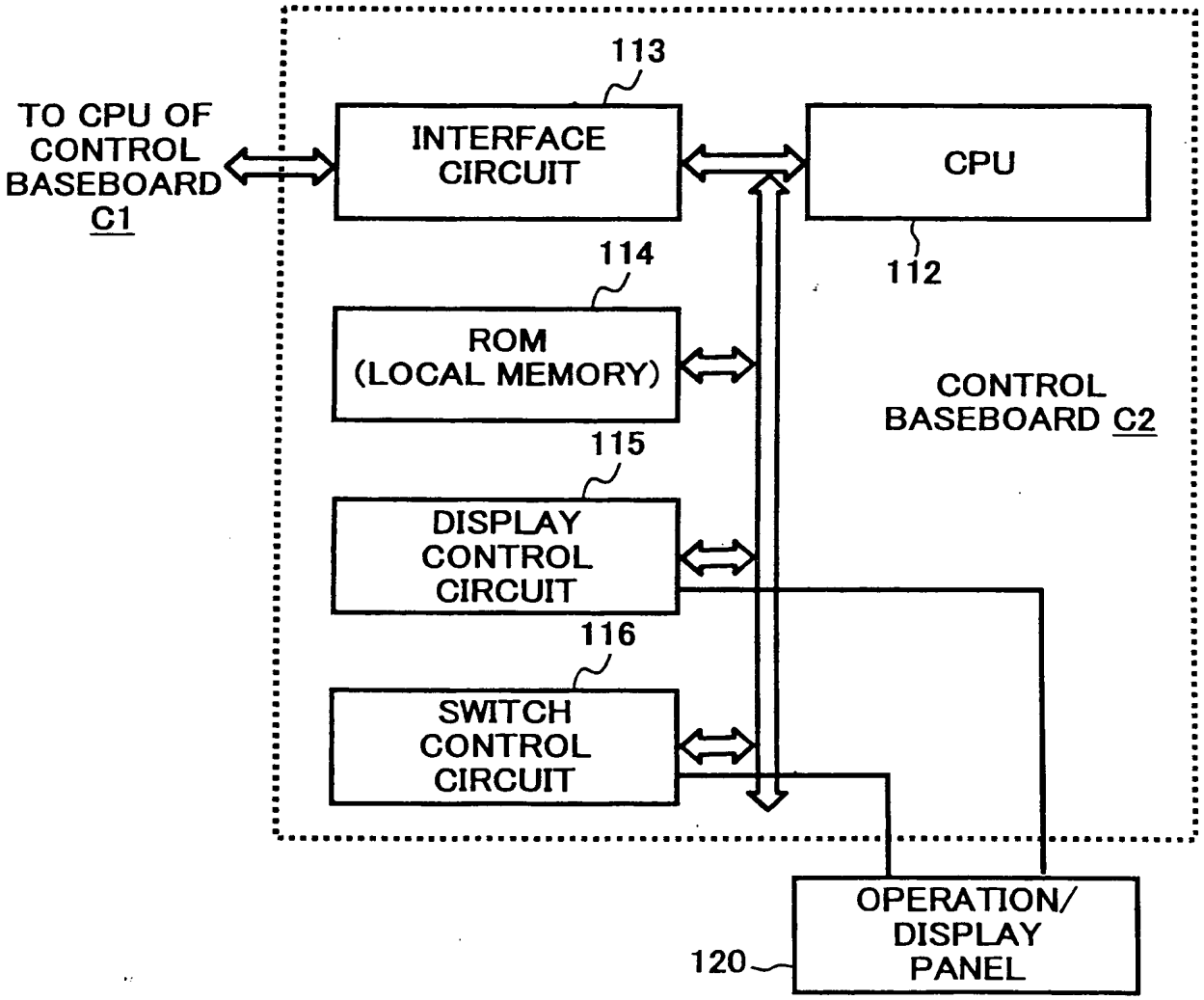

113
TO CPU OF CONTROL BASEBOARD C1
INTERFACE CIRCUIT
CPU
112
114
ROM (LOCAL MEMORY)
CONTROL BASEBOARD C2
115
DISPLAY CONTROL CIRCUIT
116
SWITCH CONTROL CIRCUIT
OPERATION/ DISPLAY PANEL
120

FIG. 10

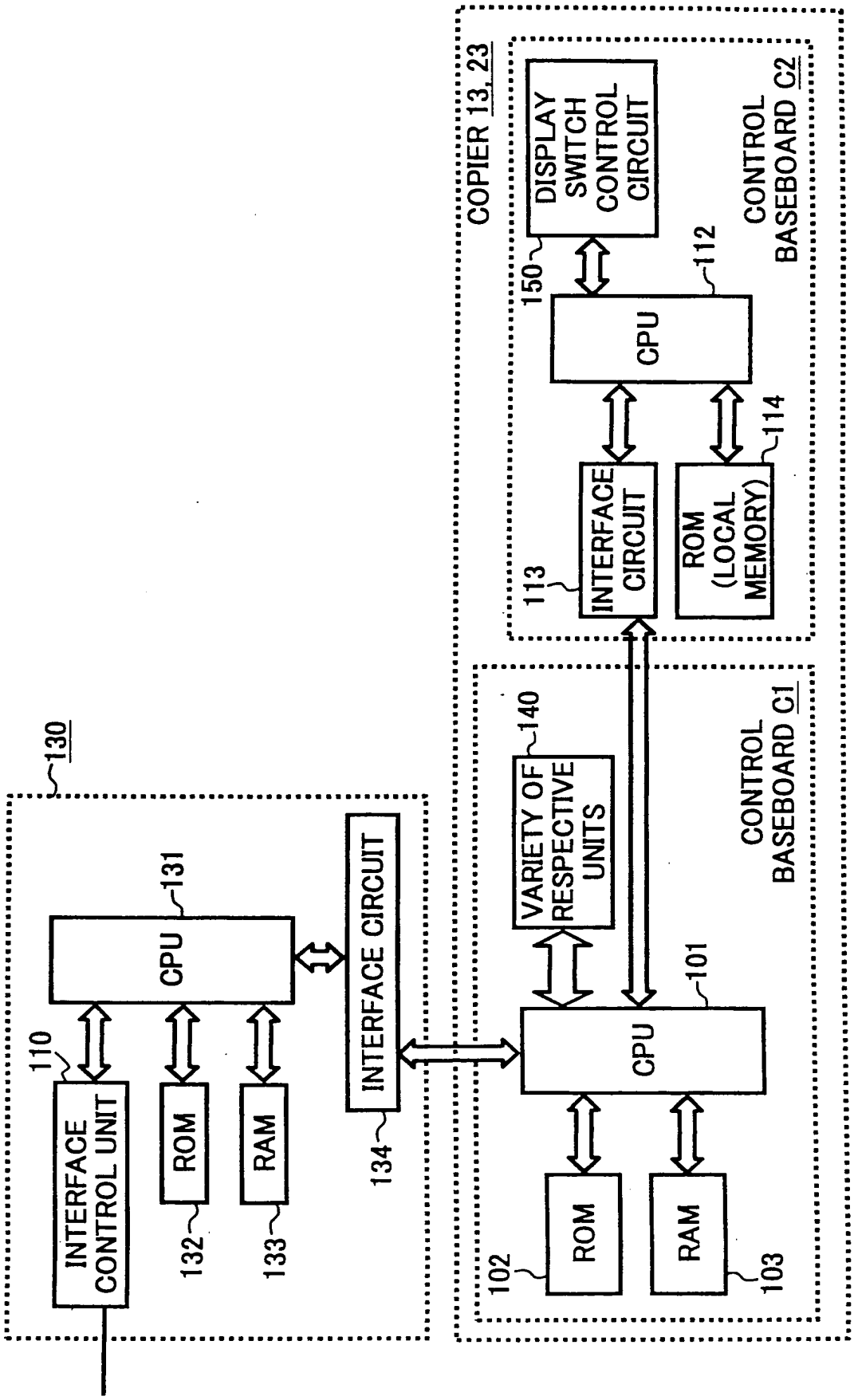

130
CPU
131
INTERFACE CONTROL UNIT
110
ROM
132
RAM
133
INTERFACE CIRCUIT
134
COPIER 13, 23
CONTROL BASEBOARD C1
VARIETY OF RESPECTIVE UNITS
140
CPU
101
ROM
102
RAM
103
CONTROL BASEBOARD C2
DISPLAY SWITCH CONTROL CIRCUIT
150
CPU
112
INTERFACE CIRCUIT
113
ROM (LOCAL MEMORY)
114

FIG. 11

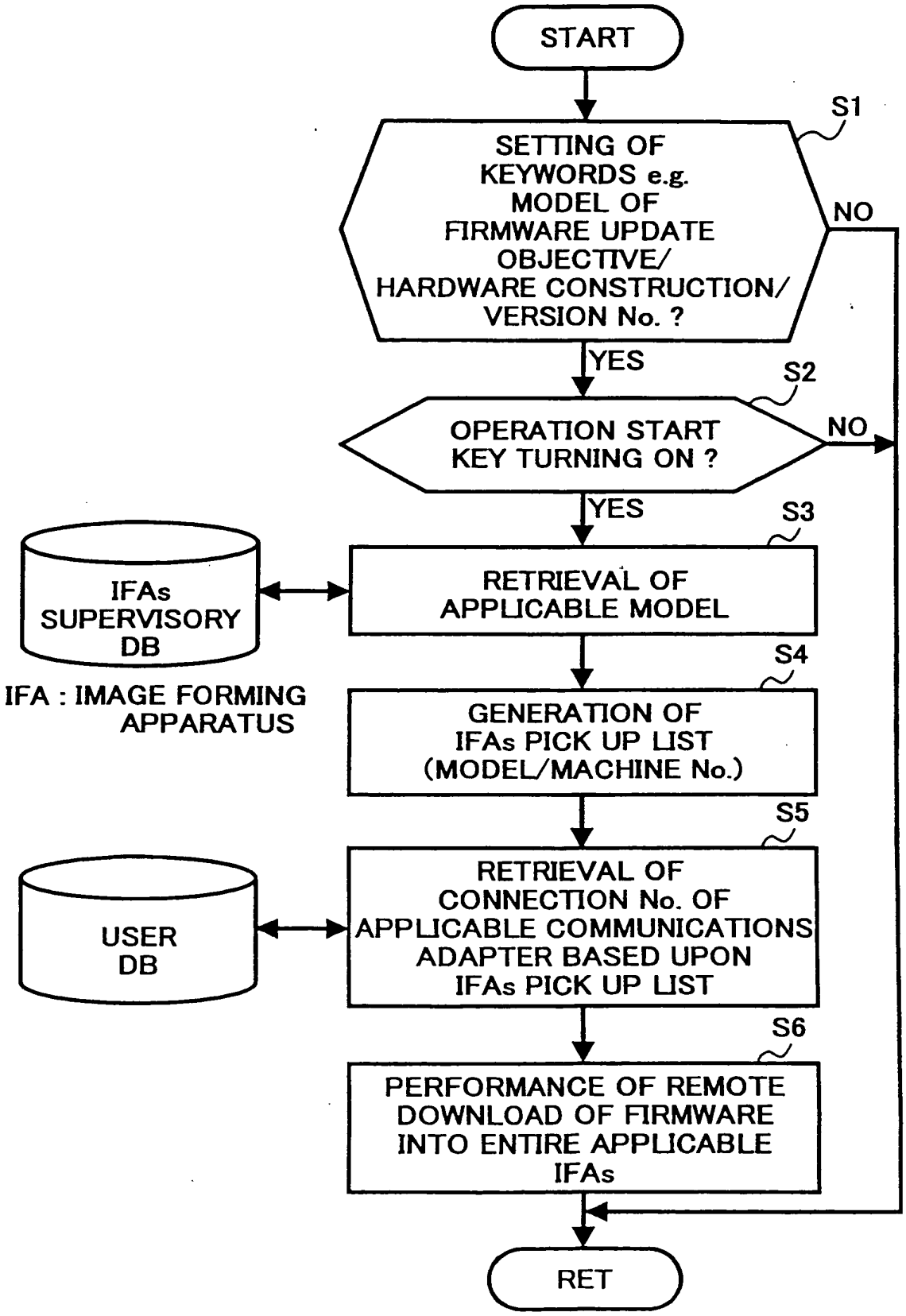

START
S1
SETTING OF KEYWORDS e.g. MODEL OF FIRMWARE UPDATE OBJECTIVE/ HARDWARE CONSTRUCTION/ VERSION No. ?
NO
YES
S2
OPERATION START KEY TURNING ON ?
NO
YES
S3
IFAs SUPERVISORY DB
RETRIEVAL OF APPLICABLE MODEL
IFA : IMAGE FORMING APPARATUS
S4
GENERATION OF IFAs PICK UP LIST (MODEL/MACHINE No.)
S5
USER DB
RETRIEVAL OF CONNECTION No. OF APPLICABLE COMMUNICATIONS ADAPTER BASED UPON IFAs PICK UP LIST
S6
PERFORMANCE OF REMOTE DOWNLOAD OF FIRMWARE INTO ENTIRE APPLICABLE IFAs
RET

FIG. 12

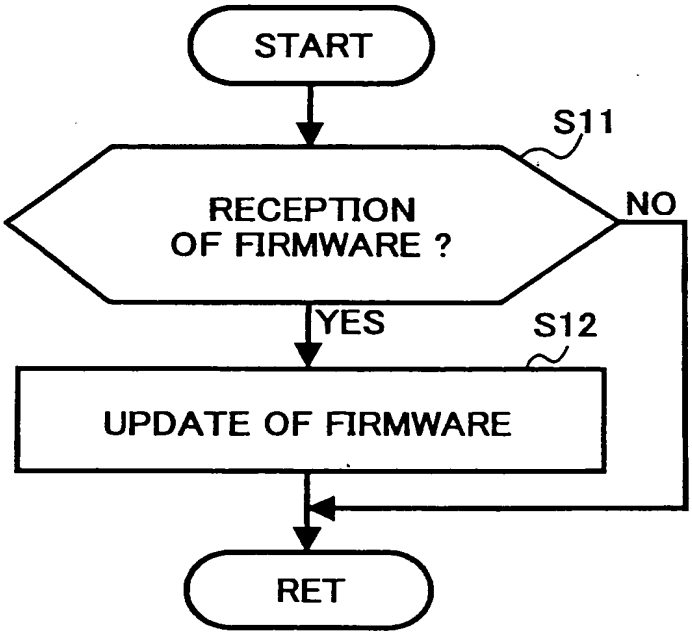

START
S11
RECEPTION OF FIRMWARE ?
NO
YES
S12
UPDATE OF FIRMWARE
RET

FIG. 13

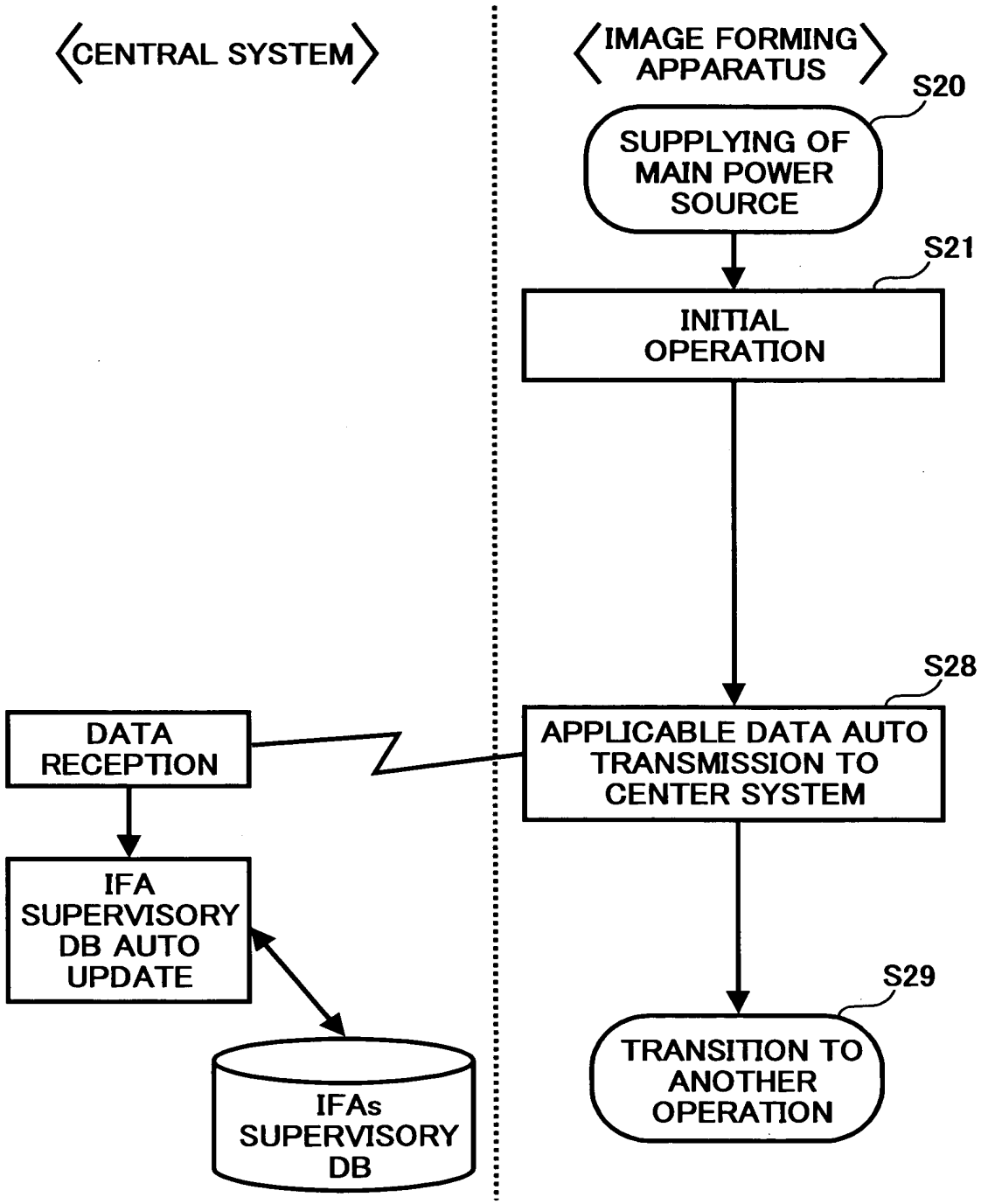

CENTRAL SYSTEM
IMAGE FORMING APPARATUS
S20
SUPPLYING OF MAIN POWER SOURCE
S21
INITIAL OPERATION
S28
APPLICABLE DATA AUTO TRANSMISSION TO CENTER SYSTEM
DATA RECEPTION
IFA SUPERVISORY DB AUTO UPDATE
IFAs SUPERVISORY DB
S29
TRANSITION TO ANOTHER OPERATION

FIG. 14

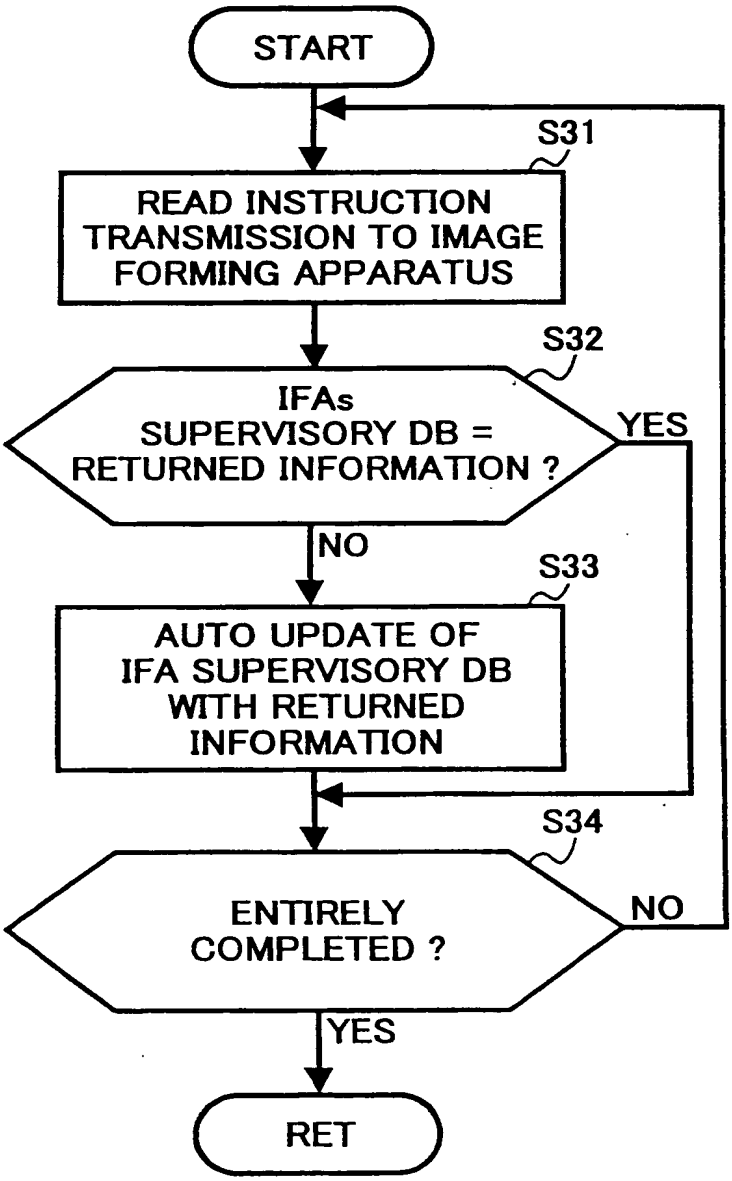

START
S31
READ INSTRUCTION TRANSMISSION TO IMAGE FORMING APPARATUS
S32
IFAs SUPERVISORY DB = RETURNED INFORMATION ?
YES
NO
S33
AUTO UPDATE OF IFA SUPERVISORY DB WITH RETURNED INFORMATION
S34
ENTIRELY COMPLETED ?
NO
YES
RET

FIG. 15A

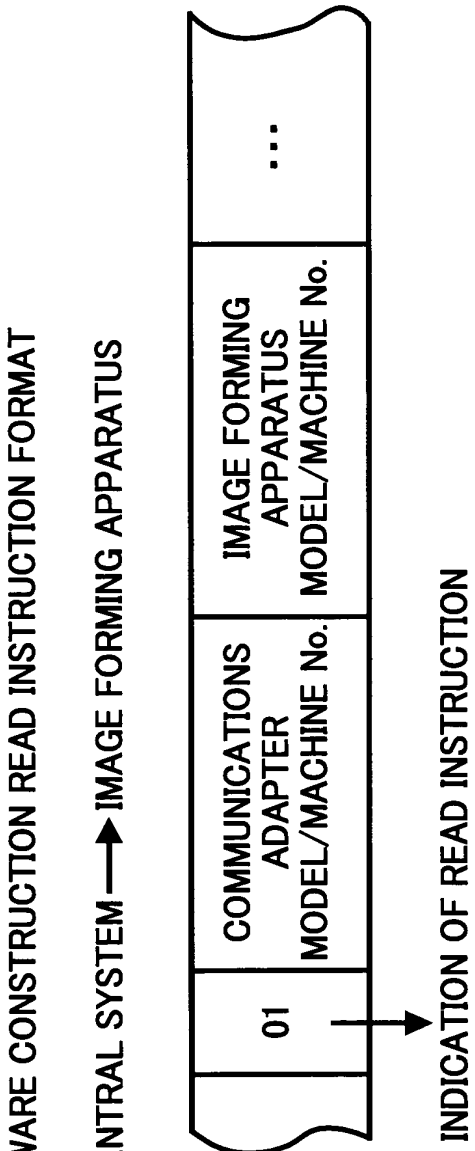

(1) HARDWARE CONSTRUCTION READ INSTRUCTION FORMAT
CENTRAL SYSTEM → IMAGE FORMING APPARATUS
01
COMMUNICATIONS ADAPTER MODEL/MACHINE No.
IMAGE FORMING APPARATUS MODEL/MACHINE No.
...
INDICATION OF READ INSTRUCTION

FIG. 15B

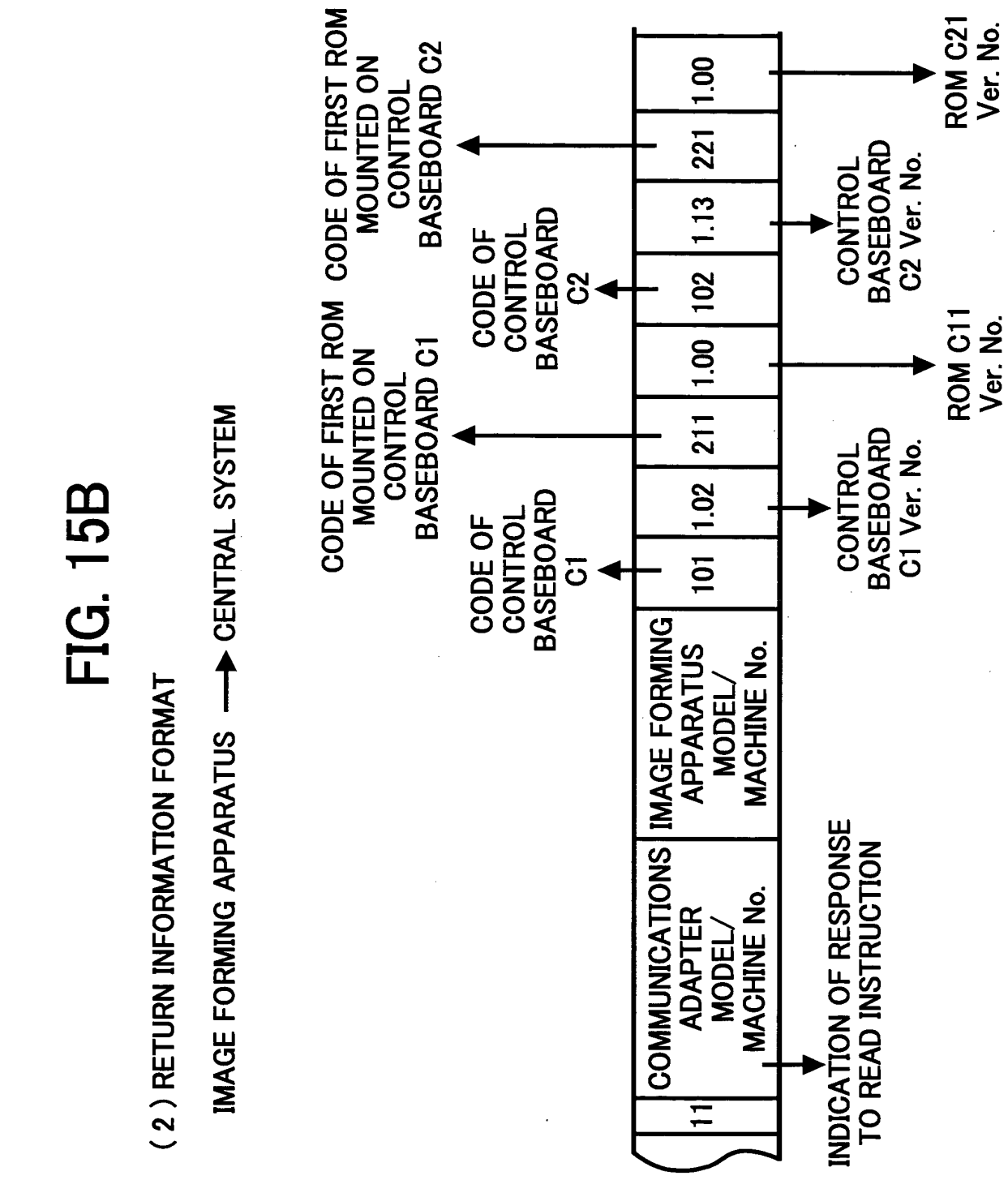

(2) RETURN INFORMATION FORMAT
IMAGE FORMING APPARATUS → CENTRAL SYSTEM
11
COMMUNICATIONS ADAPTER MODEL/ MACHINE No.
IMAGE FORMING APPARATUS MODEL/ MACHINE No.
101
1.02
211
1.00
102
1.13
221
1.00
INDICATION OF RESPONSE TO READ INSTRUCTION
CODE OF CONTROL BASEBOARD C1
CODE OF FIRST ROM MOUNTED ON CONTROL BASEBOARD C1
CODE OF CONTROL BASEBOARD C2
CODE OF FIRST ROM MOUNTED ON CONTROL BASEBOARD C2
CONTROL BASEBOARD C1 Ver. No.
CONTROL BASEBOARD C2 Ver. No.
ROM C11 Ver. No.
ROM C21 Ver. No.

FIG. 15C

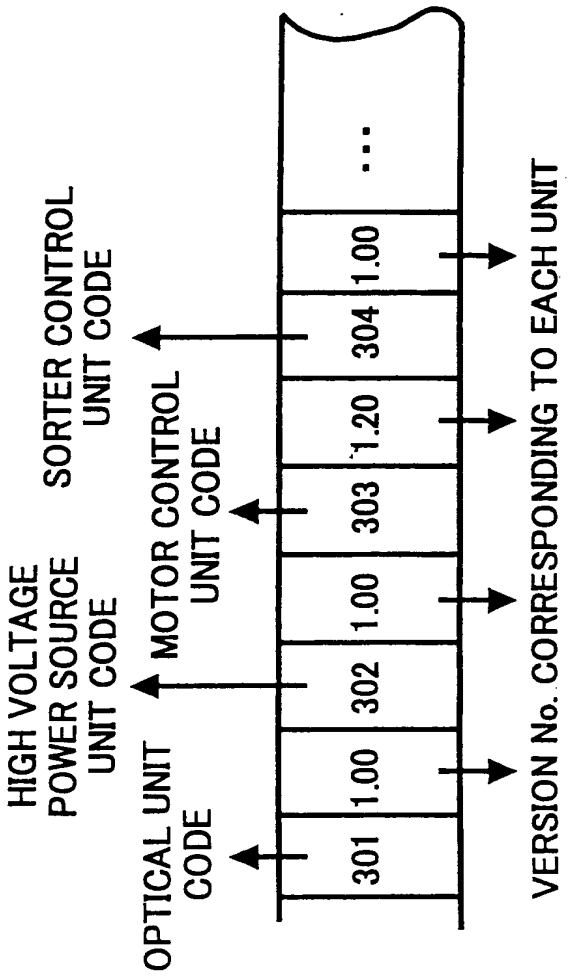

OPTICAL UNIT CODE
HIGH VOLTAGE POWER SOURCE UNIT CODE
MOTOR CONTROL UNIT CODE
SORTER CONTROL UNIT CODE
301
1.00
302
1.00
303
1.20
304
1.00
...
VERSION No. CORRESPONDING TO EACH UNIT

FIG. 16

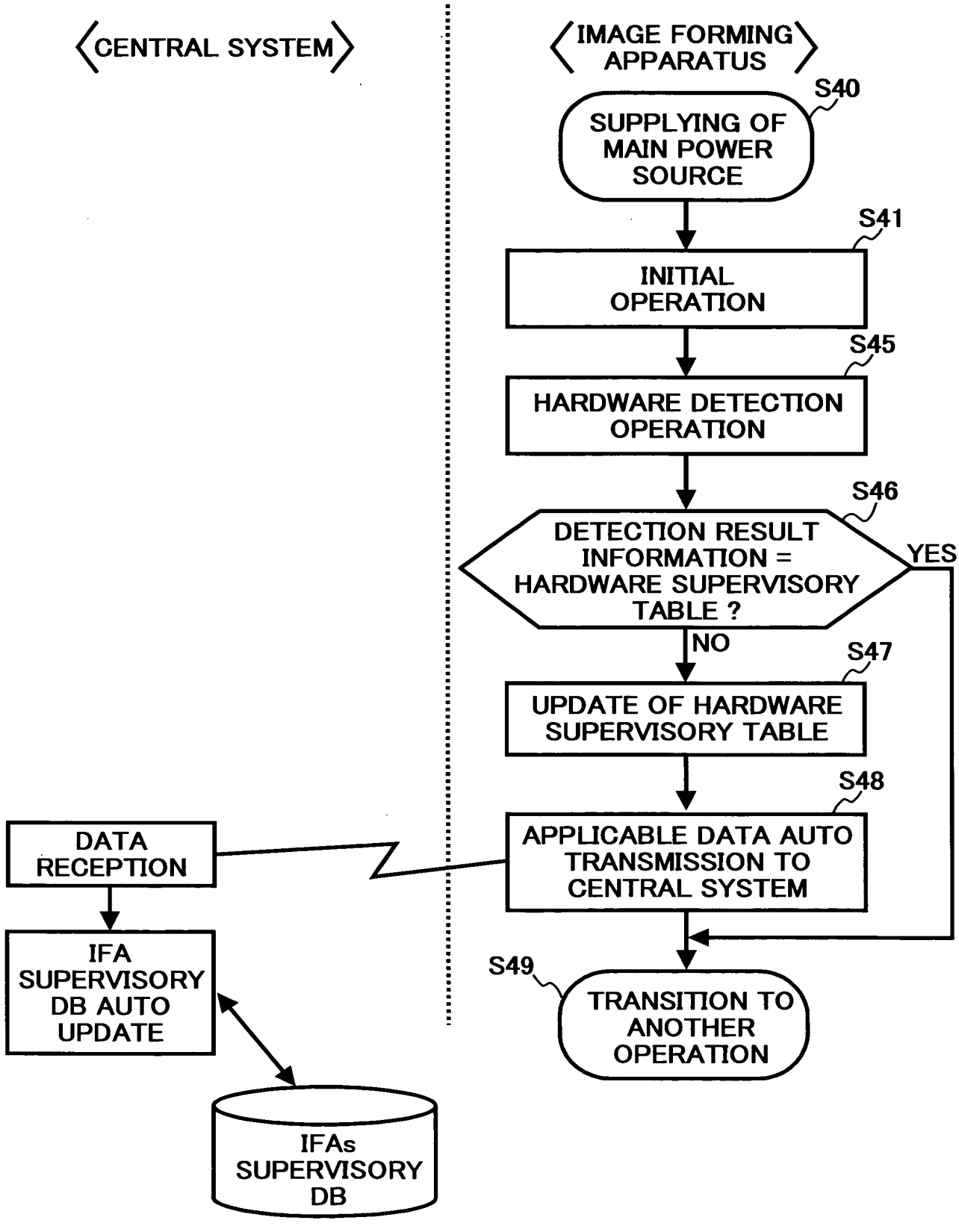

CENTRAL SYSTEM
IMAGE FORMING APPARATUS
S40
SUPPLYING OF MAIN POWER SOURCE
S41
INITIAL OPERATION
S45
HARDWARE DETECTION OPERATION
S46
DETECTION RESULT INFORMATION = HARDWARE SUPERVISORY TABLE ?
YES
NO
S47
UPDATE OF HARDWARE SUPERVISORY TABLE
S48
APPLICABLE DATA AUTO TRANSMISSION TO CENTRAL SYSTEM
DATA RECEPTION
IFA SUPERVISORY DB AUTO UPDATE
IFAs SUPERVISORY DB
S49
TRANSITION TO ANOTHER OPERATION

FIG. 17

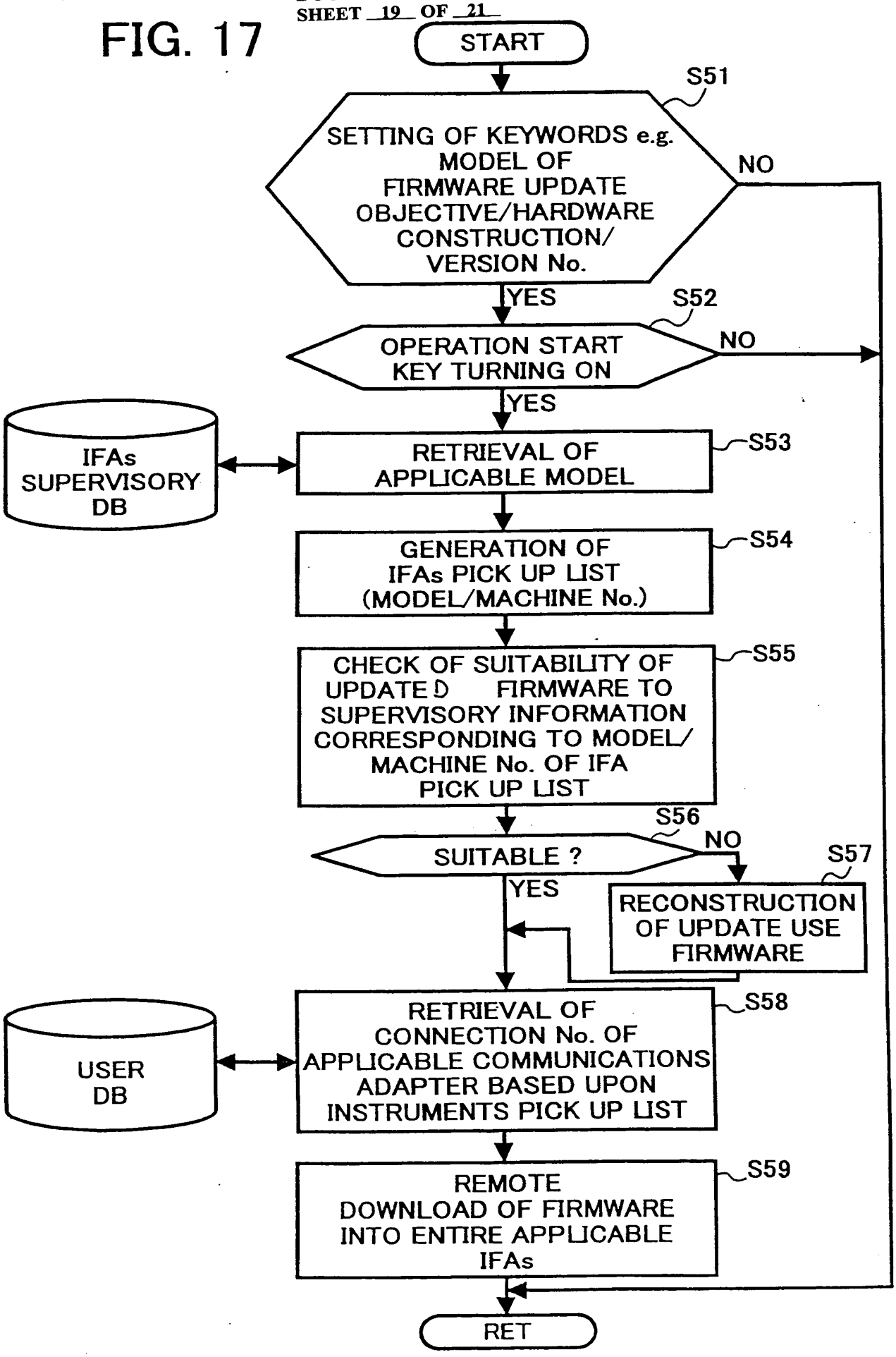
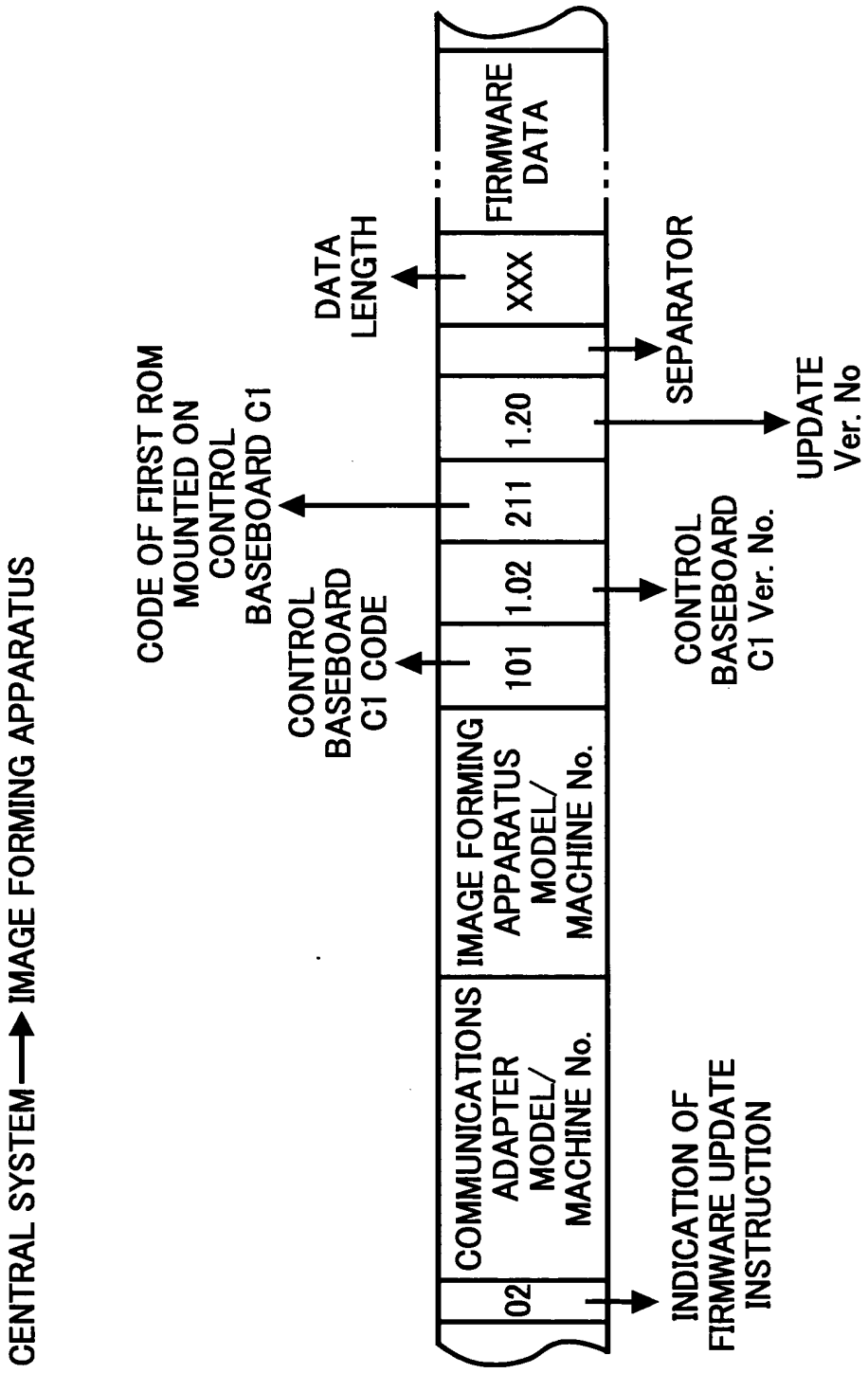

START
S51
SETTING OF KEYWORDS e.g. MODEL OF FIRMWARE UPDATE OBJECTIVE/HARDWARE CONSTRUCTION/ VERSION No.
NO
YES
S52
OPERATION START KEY TURNING ON
NO
YES
IFAs SUPERVISORY DB
RETRIEVAL OF APPLICABLE MODEL
S53
GENERATION OF IFAs PICK UP LIST (MODEL/MACHINE No.)
S54
CHECK OF SUITABILITY OF UPDATE D FIRMWARE TO SUPERVISORY INFORMATION CORRESPONDING TO MODEL/ MACHINE No. OF IFA PICK UP LIST
S55
S56
SUITABLE ?
NO
S57
YES
RECONSTRUCTION OF UPDATE USE FIRMWARE
USER DB
RETRIEVAL OF CONNECTION No. OF APPLICABLE COMMUNICATIONS ADAPTER BASED UPON INSTRUMENTS PICK UP LIST
S58
REMOTE DOWNLOAD OF FIRMWARE INTO ENTIRE APPLICABLE IFAs
S59
RET

FIG. 18

HARDWARE CONSTRUCTION									
CONTROL BASEBOARD/ ROM									
CONTROL BASEBOARD C1 Ver.	ROM C11 Ver.	ROM C12 Ver.	...	CONTROL BASEBOARD C2 Ver.	ROM C21 Ver.	ROM C22 Ver.	...		
1.00	1.22	1.00		X.XX	X.XX	X.XX			

UNIT						
	OPTICAL UNIT CONTROL UNIT D1	HIGH VOLTAGE POWER SOURCE UNIT D2	MOTOR CONTROL UNIT D3	SORTER CONTROL UNIT D4	...	
	1.20	1.00	1.10	0.00		

FIG. 19


CENTRAL SYSTEM
IMAGE FORMING APPARATUS
02
COMMUNICATIONS ADAPTER MODEL/ MACHINE No.
IMAGE FORMING APPARATUS MODEL/ MACHINE No.
101
1.02
211
1.20
XXX
FIRMWARE DATA
CODE OF FIRST ROM MOUNTED ON CONTROL BASEBOARD C1
CONTROL BASEBOARD C1 CODE
DATA LENGTH
SEPARATOR
UPDATE Ver. No
CONTROL BASEBOARD C1 Ver. No.
INDICATION OF FIRMWARE UPDATE INSTRUCTION